

THREE IRREGULAR BERBER VERBS: 'EAT', 'DRINK', 'BE COOKED, RIPEN'

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Berber verbal morphology and apophony are well-known for their complex and to some degree irregular behavior. However, while the choice of apophonic pattern is not always predictable, the basic consonantal scheme of verbs remains the same. Exceptions to this are mostly the result of low-level phonological rules or phonological innovations, such as the development of *w* to *u* under some circumstances, and the loss of intervocalic **b* in most Berber languages (Kossmann 1999: 120-125).

Reconstructible Proto-Berber verbs in which the consonantal shape changes under apophony are very rare. In this article, I will study three such verbs, which may represent an old pattern in the language, viz. $\sqrt{\text{č}}$ 'eat', $\sqrt{\text{sw}}$ 'drink', and $\sqrt{\text{nw}}$ 'be cooked, ripen'. These three verbs have irregular forms in the Imperfective¹ and in the verbal noun. This can be illustrated by the following forms from the Beni Iznasen dialect (Eastern Riffian, Northern Morocco, field notes by the author):

| Aorist | Imperfective | Verbal Noun | |
|------------|---------------|-------------------|--------------------|
| <i>ačč</i> | <i>ttətt</i> | <i>(mačča)</i> | 'eat' |
| <i>səw</i> | <i>səss</i> | <i>ti-ssi</i> | 'drink' |
| <i>ənw</i> | <i>tnənna</i> | <i>ta-nənni-t</i> | 'be cooked, ripen' |

An example of consonantal irregularities in the verbal noun of 'eat' is found in Mali Tuareg *te-tāte*.

The three verbs belong to the same formal verb class, which has a final vowel whose quality is different with different persons in different apophonic stems (for an overview, see Kossmann 1994). This class was baptized the class of "thèmes à alternance post-radical (groupe A1)",

¹ I use the term "Imperfective" here as a translation of Galand's "inaccompli". In Berberology, this aspectual stem is known under many names, among others "habitatif", "aoriste intensif", "imparfait intensif", "intensif", "extensif", "cursive", "inaccompli", and "thème II".

types 65-71, by André Basset (1929: 58ff.), while the bulk of these verbs was classified as class IA7 (also IA9, IA10, IA11) by Karl-G. Prasse (1972-4). It has long been recognized as a verb class with a lost final radical (esp. by Prasse 1972-4); recently analyzed data from Mauritanian Zenaga have shown beyond doubt that the “alternating vowel class” in non-Mauritanian Berber corresponds to the class of verbs with a final glottal stop in Zenaga (Kossmann 2001; Taine-Cheikh 2004). Therefore, the three verbs under investigation can be reconstructed with a final glottal stop in proto-Berber, i.e. $\sqrt{č}?$ ‘eat’, $\sqrt{sw}?$ ‘drink’, and $\sqrt{nw}?$ ‘be cooked, ripen’.

Before focusing on the irregular forms of the Imperfective and the verbal noun, a brief look at the history and development of the phonetic shape of the Aorist of these verbs in the Berber varieties is necessary. A number of elements need to be noted. In the first place, due to regular vocalization procedures, in many Berber dialects the semi-vowel *w* is pronounced *u* under some circumstances. For example, in the Imperative singular this vocalization is extremely common.

The cluster **nw* has a tendency to produce assimilated forms. These assimilations take different directions in different dialects:

- $nw > \eta^w > \eta\eta$ (η^w in Riffian, $\eta\eta$ in Tuareg²)
- $nw > \eta\eta^w$ (Ouargla)
- $nw > nn$ (Ghadames, Gourara)
- $nw > ww > bb^w$ (*ww* attested in many Algerian dialects, *bb^w* in Great-Kabylia)

These assimilations changed the verb ** $\sqrt{nw}?$* to a verb with a monoconsonantal geminate. As this represents a different verb type with a different apophonic template in the Imperfective, this has led to a rearrangement of the Imperfective morphology in a number of dialects.

² Foucauld (1951-2: 1282) has <eñ> in Ahaggar Tuareg. In Foucauld’s transcription <ñ> normally stands for a palatal nasal rather than velar nasal, which is transcribed <ñ>. It is not clear to what extent Foucauld’s transcription represents a mishearing. One other word that in other Tuareg languages has $\eta\eta$ is transcribed <ñ> by Foucauld, <ãña> ‘brother’ (1951-2: 1445). Both cases probably go back to **nw*. Therefore, whatever Foucauld’s notation may represent, there is no need to posit a root $\sqrt{ny}?$ rather than $\sqrt{nw}?$, as done by Prasse (1972-4, Vol. III: 125).

More difficult is the case of $\sqrt{\text{č}}$ 'eat'. Most dialects have forms with $\check{\text{c}}$,³ which in most cases behaves like a geminate. By regular developments, some varieties have changed $\check{\text{c}}$ to $\check{\text{s}}$. Some Tuareg dialects (Ahaggar and Mali Tuareg) have a different form, $\check{\text{a}}\text{k}\check{\text{s}}$. Because of its restricted geographical distribution, and because of the irregular Imperfectives and verbal nouns (see below), I consider these forms a dissimilation from earlier $\check{\text{a}}\text{t}\check{\text{s}}$ (or $\check{\text{a}}\check{\text{c}}$, which would represent the same pronunciation) (for a different point of view, v. Prasse 1972-4, Vol III: 110). One may note that modern Berber varieties have no objection to words with the cluster $\text{k}\check{\text{s}}$, cf. Tashelhiyt $\text{k}\check{\text{s}}\text{m}$ 'enter!'.

The phoneme $\check{\text{c}}$ is rare in most Berber languages,⁴ and the verb 'eat' may be the only case which can be reconstructed for Proto-Berber. Elsewhere I have proposed an analysis of the equally rare cases of other geminated palatals that can be reconstructed into Proto-Berber. According to this analysis $\check{\text{g}}\check{\text{g}} < *y\text{y}$, $\check{\text{z}}\check{\text{z}} < *z\text{y}$, while no reconstruction of $\check{\text{s}}\check{\text{s}}$ is provided (Kossmann 1999: 225; 235). One may note that there is no counter-evidence against considering $\check{\text{s}}\check{\text{s}}$ as being derived from $*s\text{y}$; on the other hand, there is no positive evidence for such a derivation, either.

It is tempting to consider $*\check{\text{c}}$ as derived from a consonant cluster as well. One could imagine, for example, a pre-Proto-Berber reconstruction $*t\text{y}$. While there is no clear evidence for this, there is no counter-evidence to it either: words with consonantal clusters featuring y as the second element are conspicuously rare in the reconstructible part of the Berber lexicon.

The first verb under consideration is $\sqrt{\text{č}}$ 'eat'. In the great majority of Berber varieties, this verb has an Imperfective form, which lacks the palatal element, $*t\check{\text{a}}\text{t}\check{\text{t}}\check{\text{a}}?$. Reflexes of this form take the following shapes:

| | |
|-----------------|--|
| <i>tattā(?)</i> | Zenaga (Nicolas 1953: 423 <i>tétta</i>) |
| <i>(t)tātt</i> | Ghadames |

³ In some varieties, $\check{\text{c}}$ has regularly become $\check{\text{s}}$. In Berber, there is no phonetic opposition between mono-phonemic $/\check{\text{c}}/$ and bi-phonemic $/\text{t}\check{\text{s}}/$, as, for example, in Polish *czy* [$\check{\text{c}}\text{i}$] 'question particle' vs. *trzy* [$\text{t}\check{\text{s}}\text{i}$] 'three'. In most Berber varieties, $[\check{\text{c}}]$ cannot be dislocated by schwa, which is a good reason to consider it a mono-phonemic or a geminate consonant. As far as I know, Figuig Berber is the only Berber variety where $[\check{\text{c}}]$ is regularly dislocated by schwa, e.g. *ad i-tāš* 'he will eat', which proves it is bi-phonemic in this dialect.

⁴ An important exception are the Zenatic forms with $\check{\text{c}}(\check{\text{c}})$ which correspond to forms with kk in other dialects (Kossmann 1999: 177-180). The verb 'eat', however, has $\check{\text{c}}(\check{\text{c}})$ ($> \check{\text{s}}\check{\text{s}}$) in virtually all Berber varieties, and therefore has nothing to do with this set of cognates.

| | | |
|----------|-----------|--|
| | > (t)tatt | Mzab, Ouargla, Sened, Djebel Nefusa, Riffian, Figuig, Western Algerian dialects, Kabyle, Aures |
| | > tet | Tetserrét |
| (t)tatta | | Augila, Middle Atlas |
| tatt(u) | | Tuareg |

In a number of dialects, the form has been regularized, and the second consonant is palatal. In such forms, the first (t)t- can be analyzed as the Imperfective prefix, which is regularly used with verbs only consisting of one geminated consonant (and a lost final glottal stop):

| | |
|-------------------|------------------------------|
| takk ^y | Elfoqaha ⁵ |
| təč | Sokna, Siwa, Ayt Seghrouchen |

A special form is Tashelhiyt *štta* (Aorist *šš*), which seems to be the result of a metathesis *tšš* > *št*.

The Proto-Berber form **tāttā?* can be interpreted in two ways: either the initial *t* is interpreted as the Imperfective prefix (Prasse 1972-4, Vol. III: 119), or the form is considered the result of reduplication. In both cases, the basic *č* is depalatalized. The reduplication solution is enhanced by some verbal nouns:

| | |
|-----------------------|-----------------------------|
| tə-dadi (< *tə-tətə?) | Zenaga |
| a-tatti | Ghadames |
| te-tāte, te-təte | Mali Tuareg, Ahaggar Tuareg |
| > tə-teti | Tetserrét |

Probably the following forms should be added:

| | |
|------------------------------|-------------|
| t-uttu-t (< *t-utət(t)u-t ?) | Gourara |
| te-tte (< *te-təte) | Ayer Tuareg |

The second verb under consideration is *√sw?* 'drink'. The Imperfective and the verbal noun of this verb often show forms which lack any trace of the

⁵ Elfoqaha has the unusual Aorist form *akk^y*, which, I suppose, goes back to earlier **atš* by a change of apical to dorsal mode of articulation.

semi-vowel *w*. There are two major types of *w*-less forms in the Imperfective, something which would be represented in Proto-Berber as **sǎssǎ?* and something which would be represented as **tǎ-ssǎ?* with the Imperfective prefix *t-*. The dialectal distribution is as follows:

| | | |
|-----------------|------------------|---|
| <i>*sǎssǎ?</i> | > <i>sass</i> | Zenaga (Nicolas 1953: 368 <i>séss</i>) |
| | > <i>sǎss</i> | Ghadames |
| | > <i>(s)ǎss</i> | Bousemghoun (Sud oranais), Mzab, Ngoussa (near Ouargla), Sened, Western Algerian dialects |
| | > <i>ss</i> | Ayt Seghrouchen |
| | > <i>ssa</i> | Middle Atlas, Tashelhiyt |
| | > <i>sass(u)</i> | Tuareg |
| | > <i>šš</i> | Tetserrét |
| | > <i>šš</i> | Tetserrét |
| <i>*tǎ-ssǎ?</i> | > <i>(t)tǎss</i> | Ouargla, Figuig (dialectal), Greater Kabylia |
| | > <i>dǎss</i> | Figuig (dialectal) ⁶ |

A combination of the two processes is found in Elfoqaha, which has *tsǎss*.

In a number of dialects, forms with the semi-vowel have been introduced. Forms of this type follow different strategies, such as employing regular devices for the formation of the Imperfective of biradical verbs (either following Prasse's classes IA7 or IA5), or the prefixation of the Imperfective marker *(t)t-*, sometimes combined with irregular gemination of the first radical. Such forms include Augila *šuwwa*, Gourara, Djebel Nefoussa *ssaw*, Sokna *tassaw*, Siwa *t(i)su*, Eastern Kabyle *tassu*.

Forms without the semi-vowel are also found in the verbal noun, where one regularly finds forms derived from a reduplicated basis:

| | |
|--------------------------------------|---|
| <i>tǎ-šǎši</i> (< <i>*tǎ-šǎšǎ?</i>) | Zenaga |
| <i>a-sǎssi</i> | Ghadames, Beni Salah (Western Algeria) |
| <i>te-sǎse, te-sǎse</i> | Mali Tuareg, Ahaggar Tuareg |
| > <i>tešše</i> | Niger Tuareg |

⁶ The prefix *d-* is uniquely found in some variants of Figuig Berber (esp. the village Zenaga). It is also found in the verb 'do': Aorist *ɔyy* (< **ɔg*), Imperfective *dǎkk* (< **dagg*). The reasons behind its voiced pronunciation are unknown.

| | | |
|-------------------|----------------|--|
| | > <i>tšeši</i> | Tetserrét |
| <i>ti-səssi</i> | | Riffian, Western Algerian dialects |
| | > <i>tassi</i> | Djebel Nefousa |
| | > <i>tissi</i> | Figuig, Gourara, Aures, Middle Atlas, Ayt Seghrouchen, Tashelhiyt (also <i>tissa</i>) |
| <i>ta-səssi-t</i> | | Beni Iznasen |
| <i>ti-ssi-t</i> | | Greater Kabylia |

The third verb under consideration is $\sqrt{\text{nw}}$ ‘be cooked, ripen’. The case for irregularity is less strong in this verb than with the other two verbs, as most Berber varieties have regular forms of the Imperfective and the verbal noun. Still, there exist a number of dialects which have forms which lack the labial element present in the Aorist. The irregular Imperfective forms of this type are the following:

| | |
|---------------|--|
| <i>nənna</i> | Augila |
| <i>tnənn</i> | Igli (Sud oranais) |
| <i>tnənna</i> | Beni Iznasen (Eastern Riffian), Beni Snous (Western Algeria), Beni Salah (Western Algeria) |
| <i>tnanna</i> | Temsamane (Central Riffian) |
| <i>tnana</i> | Matmata (Western Algeria) |
| <i>ttnan</i> | Aures |

Most of these instances come from the Zenatic dialects of Northern Morocco and Northern Algeria (on Zenatic as a sub-group of Berber, see Kossmann 1999: 30-32); however, their presence in Augila (Eastern Libya) shows that they are not restricted to this area. The Zenatic forms all show a combination of reduplication and the prefixation of *t-*. The combination of the Imperfective prefix *t-* with consonantal gemination is not uncommon in these dialects, e.g. Beni Iznasen *ərwal* ‘flee’, Imperfective: *trakk^wal*. Tuareg dialects show an interesting half-way regularization in the Imperfective of this verb. In some Tuareg dialects, the cluster **nw* has evolved in *ηη*, and the Aorist of the verb ‘be cooked’ has become *ǎηη*. In these dialects, one finds Imperfective forms such as Iwellemmeden *naηηu* and Mali Tuareg *naηη* (similarly Ahaggar <nāññ>). These forms are probably the result of the introduction of the velar nasal into an older reduplicated form **nann*. Instead of being entirely reformed into

a monoliteral geminated verb, the Imperfective form has preserved the initial *n*.

Verbal nouns with loss of the labial element of this verb are attested in roughly the same dialects as similar forms of the Imperfective. Note that some of the items given are derivations from the causative stem ('cooking' being derived from the transitive verb 'cook').

| | |
|--------------------------------------|--------------------------------|
| <i>tə-nənna-t</i> | Augila |
| <i>ta-nənni-t</i> | Beni Iznasen (Eastern Riffian) |
| <i>t-nənni</i> | Beni Snous (Western Algeria) |
| <i>ti-nni</i> (< <i>*ti-nənni</i> ?) | Figuig |
| <i>a-snanni</i> (< Causative) | Temsamane (Central Riffian) |
| <i>a-snənni</i> (< Causative) | Beni Salah (Western Algeria) |

Tuareg dialects with **nw* > *ηη* present a similar situation in the verbal noun as in the Imperfective, viz. the introduction of *ηη* without loss of the first *n* of the reduplicated form: Iwellemmeden, Mali Tuareg, *te-nāηηe*, *te-nəηηe* (similarly Ahaggar <téneñné>).

To what extent and in which form can the items studied above be reconstructed in Proto-Berber?⁷ The Imperfective form of 'eat' is the least problematic, as it is attested almost everywhere in Berber, and as all reflexes point to **tāttā?*. The verbal noun is less generally attested, but its existence in Zenaga, Ghadames, and Tuareg point to an early origin. The exact reconstruction must remain uncertain, but something like **-tāt(t)e?* would match most forms.

The Imperfective of 'drink' has two different irregular shapes, one with reduplication, one with the Imperfective prefix (*t*)*t*-. The form with reduplication is attested all over the Berber speaking territory, while the form with *t*- only appears in the Northern Sahara (Figuig, Ouargla) and in Kabylia. Therefore, there is no doubt that the reduplicated form is Proto-Berber. The introduction of (*t*)*t*- in Figuig, Ouargla and Kabylia may have been favored by the fact that *s*- is normally the prefix of the causative, so

⁷ The reconstructed forms basically follow the reconstructions in Kossmann (1999, 2001). I have chosen to represent **ī* and **ū* as <ə>, as in practice their reconstruction is often problematic. Moreover, I am less confident than before about the possibility of reconstructing a ternary vowel contrast in the short series for Proto-Berber rather than the binary contrast attested in Ghadames, Tuareg, and, it seems, Zenaga (Catherine Taine-Cheikh, personal communication). The status of **e* in the verbal nouns is unclear.

that forms with reduplication present the danger of erroneous interpretation as a causative verb. The form can be reconstructed as **sāssāʔ*. The attested forms of the verbal noun point to something like **sās(s)eʔ*.

The reconstruction of irregular forms of the verb ‘be cooked’ is problematic, as regular forms abound in Berber, while the irregular forms are mainly restricted to one specific area. However, they also appear in Augila (Eastern Libya), which is in many points among the most conservative dialects of Berber, and which has no special connections to Zenatic. Moreover, Tuareg has forms, which, although different from the Zenatic / Augila forms, point to an earlier, more similar, formation. As it is much easier to regularize an irregular paradigm by analogy than it would be to irregularize a regular verb, one can be confident that reduplicated forms represent the older situation. The reconstruction of the Imperfective form is complicated, as the Zenatic forms all have a combination of reduplication and the prefix *(t)t-*. The adjunction of the prefix *(t)t-* to Imperfectives with reduplication is found with a restricted set of verbs in the Zenatic dialects involved. It is extremely uncommon elsewhere, and probably constitutes a Northern Zenatic innovation (Riffian, Western Algerian Berber, Aures). Therefore, the presence of *t-* in the verb ‘be cooked’ can hardly be ancient, and *t-*-less forms, such as found in Augila and reconstructible Tuareg, must be old. I would therefore reconstruct **nānnāʔ*. The verbal noun could go back to something like **-nān(n)eʔ*.

Summarizing, we have evidence for very similar formations in these three verbs in Proto-Berber:

| Aorist | Imperfective | Verbal Noun | |
|---|--|---|-------------|
| <i>*āčəʔ</i> | <i>*tāttāʔ</i> | <i>*-tāt(t)eʔ</i> | ‘eat’ |
| <i>*āswəʔ</i> | <i>*sāssāʔ</i> | <i>*-sās(s)eʔ</i> | ‘drink’ |
| <i>*ānwəʔ</i> | <i>*nānnāʔ</i> | <i>*-nān(n)eʔ</i> | ‘be cooked’ |
| <i>*āC₁(C₂)əʔ</i> | <i>*C₁āC₁C₁āʔ</i> | <i>*-C₁āC₁(C₁)eʔ</i> | |

It is not clear whether the verbal noun originally had a geminate or not. Zenaga and Tuareg point to forms without gemination, while Zenatic and Libyan Berber suggest that the second consonant was a geminate.

How can these formations be explained? At this point, it is useful to remember the suggestion, made above, that *√čʔ* should be interpreted as the result of a pre-Proto-Berber assimilation from **√tyʔ*. If one accepts this reconstruction, one notes that the three verbs under investigation not only

share the last glottal stop in the shape of their roots, but also share a semi-vowel as a second consonant. Thus, one could consider the morphology of the Imperfective and the verbal noun as a formation specially used with verbs of the shape $\sqrt{Cw/y?}$.

This brings us to a possible explanation of the reduplication pattern found in these three verbs. There are a number of clues that indicate that in Proto-Berber (or in an earlier stage of the language), there were restrictions on the set of consonants which could be geminated by morphological processes. The clearest example is provided by verbs which have ancient $*\underline{h}$ ($> h$ in Tuareg)⁸ as one of their root consonants. In those morphological formations where one would expect this consonant to be geminated, one sometimes finds metathesis which leads to gemination of another consonant (Prasse 1972-4, Vol. I: 75; Kossmann 1999: 78-79; Mali Tuareg forms):

| Aorist | Imperfective | |
|--------------|---------------|--------|
| <i>ǎlh</i> | <i>hall</i> | 'weep' |
| <i>anhəy</i> | <i>hannǎy</i> | 'see' |

One has the impression that the reason behind this metathesis is to prevent these forms from being $**lahh$ and $**nahhǎy$. In modern Tuareg, this prohibition no more obtains. It probably goes back to (pre-)Proto-Berber.

A more complicated example is provided by the verbs of Prasse's class IA5. This class consists of bi-radical verbs which do not have any irregular vowel alternations, and therefore are radically different from the verbs which have an original final glottal stop. This verb class has an unexpected formation of the Imperfective, $C_1C_1aC_2$ with gemination of the first radical and insertion of a full vowel *a*. In all other verb types with gemination, it is the second radical which is geminated, and they normally have short *ǎ* as the apophonic vowel. Scholars have presented different explanations for this situation. One explanation, which seems to fit the facts rather well, has been proposed by Louali & Philippson (2004: 87-89), who base themselves loosely on Prasse's analyses. Their synchronic account can be rephrased into the following historical scenario: verbs of class IA5 originally had a glottal stop as their second radical, which was lost in this position in all dialects, including Mauritanian Zenaga. In an earlier stage of Berber language history, it was impossible to have geminated glottal stops, and

⁸ On the reconstruction of this consonant, which is still preserved in Ghadames, in Augila, and (pronounced *h*) in Tuareg, see Prasse 1969, Kossmann 1999: 61ff.

therefore the gemination was dislocated to the first radical. This is shown by the following example (forms reconstructed by the present author); the full *a* in the modern Berber forms would be a reflex of the sequence **ā?ā*:

| Aorist | Imperfective | |
|-----------------------------|--|------------|
| <i>*āgʔan</i> > <i>āgan</i> | <i>**gā?ān</i> > <i>*gā?ān</i> > <i>ggan</i> | ‘lie down’ |

While different from the case of **b*, which has metathesis in order to prevent gemination,⁹ such a scenario would also point to the prohibition of certain geminates.

Following this line of thought, one could venture the idea that at some stage in pre-Proto-Berber there also existed a prohibition on the gemination of the semi-vowels *y* and *w*.¹⁰ In order to prevent the formation of forms with geminate semi-vowels, our three verbs would have undergone reduplication, in order to fit the basic Imperfective template, thus:

| Aorist | Imperfective | |
|---------------|----------------------------------|---------|
| <i>*āswaʔ</i> | <i>**sāwwāʔ</i> > <i>*sāssāʔ</i> | ‘drink’ |

The same explanation could be used with verbal nouns, provided that one reconstructs forms with a geminate, i.e. ***C₁āC₂C₂eʔ* > **C₁āC₁C₁eʔ*

One has to stress, however, that no prohibition of this type exists in any modern Berber dialect, at least as far as *w* is concerned.¹¹ In fact,

⁹ Prasse (1972-4, Vol. III: 75) interprets the Imperfective of this verbal class as the result of consonantal metathesis and subsequent vowel lengthening for compensation: ***gā?ān* > **āggān* > *ggan* (forms as would be reconstructed by the present author). In this analysis, the development would be identical to that of **b* in **ālbəʔ* (> Mali Tuareg *ālh*). This is more satisfactory from the point of view of similar problems being solved by similar processes, and it would confirm Prasse’s idea that **b* and **ʔ* (my reconstruction) behave in an identical way. However, I think the lengthening of the second **ā* in order to compensate for the loss of the initial syllable, which is proposed by Prasse, is not convincing. One would either expect unlengthened **ā*, i.e. ***ggān*, or the introduction of the Imperfective prefix (*t*)*t-*, as is found with verbs with an initial glottal stop: Aorist **āʔkar*, Imperfective **tt-āʔkār* (instead of ***ākkār* > **kkar*) ‘steal’. Therefore, I prefer Louali & Philippson’s solution of a transposition of gemination to Prasse’s consonantal metathesis.

¹⁰ A similar line of thought is followed by Prasse (1972-4, Vol. III: 109), when he explains the reduplicative Imperfective of ‘drink’: “ss gém[iné] sert peut-être tout simplement à éviter *ww* gém[iné] instable, devenu normalement *gg* > *gg*”. Prasse does not consider the forms of ‘eat’ and ‘be cooked’ the results of a similar process. In his analysis, **tāttāʔ* is based on a root *√wth* with the Imperfective prefix (*t*)*t-*, which would belong to a different root from *āč*, *āks*. He does not comment on the Imperfective of ‘be cooked’.

¹¹ Medial *y* is extremely rare in reconstructible Berber verbs.

there are many verbs which have a medial *w*, which is geminated in the Imperfective, e.g. Aorist *dwal* Imperfective *dəkk^wəl* 'become', *ɾwəl* – *ɾəkk^wəl* 'flee', *zwa* – *zəkk^wa* 'go away' (Figuig examples). This, however, does not rule out the possibility that in an earlier stage of Berber different conditions applied, and that the irregular forms of 'eat', 'drink' and 'be cooked' are the last remnant of this lost prohibition.

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¹² Most forms in the article have been cited from the sources enumerated in Kossmann (1999: 26-29). Only literature cited explicitly in the article and sources not given in Kossmann (1999) will be enumerated below.

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